

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification								DATE: February 2000		
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-4					R-1 ITEM NOMENCLATURE Program Element (PE) Name and No. Ocean Engineering Development 0603713N					
COST (\$ in Millions)		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Total PE Cost		14.070	16.712	15.371	16.052	14.330	14.615	14.908	CONT.	CONT.
Deep Submergence Biomedical Development/S0099		3.976	3.756	3.668	3.710	3.867	3.944	4.023	CONT.	CONT.
Shallow Depth Diving Equipment/S0394		10.094	12.956	11.703	12.342	10.463	10.671	10.885	CONT.	CONT.
Quantity of RDT&E Articles									CONT.	CONT.

A. Mission Description and Budget Item Justification: Developments in this program will enable the U.S. Navy to overcome deficiencies that constrain underwater operations in the areas of search, location, rescue, recovery, salvage, construction, and protection of offshore assets. This program develops medical technology, diver life support equipment, vehicles, systems, and tools to permit manned underwater operations.

B. Program Change Summary:

	FY 1999	FY 2000	FY 2001
FY 2000 President's Budget:	15.257		
Appropriated Value:	15.257	16.813	16.289
Adjustment to FY 1999/2000 Appropriated Value/ FY 2000 President's Budget:	-1.187	-0.101	-0.918
FY 2001 President's Budget Submit:	14.070	16.712	15.371

Funding: The FY 1999 decrease of \$1.187M is due to Congressional undistributed reductions and FY 1999 midyear reprogrammings to finance higher priority emergent requirements. The FY 2000 decrease of \$0.101M is due to Congressional undistributed reductions. The FY 2001 reduction of \$0.918M is due to pricing adjustments.

Schedule: Not applicable.

Technical: Not applicable.

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2000			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER					
RDT&E,N/BA-4	Ocean Engineering Development 0603713N				Deep Submergence Biomedical Development/S0099					
COST (\$ in Millions)		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost		3.976	3.756	3.668	3.710	3.867	3.944	4.023	CONT.	CONT.
RDT&E Articles Qty										
A. Mission Description and Budget Item Justification: Develops advanced biomedical/bioengineering technology for enhancing medical and life support for submarine escape and rescue; and for diver safety and effectiveness; supports deeper, longer, safer, more flexible dives. Deliverables include: a) exposure guidance for atmospheric contaminants, underwater continuous and impulsive noise, underwater blast, oxygen breathing, and diving depth/time profiles; b) medical procedures for life support, submarine escape and rescue (including new Submarine Rescue Diving and Recompression System, SRDRS), prevention and treatment of decompression illness, c) technologies to assess underwater noise and life support parameters; enable non-chemical CO2 scrubbing; predict decompression risk in diving; provide senior survivor with expert decision system, and enhance underwater swimming efficiency. Requirements: Deep Submergence Biomedical Development (NAPDD #429-873) of 29 March 95.										
Program Accomplishments and Plans:										
FY 1999 Accomplishments:										
- (\$2.049) Diver Health and Safety Research: Delivered integrated set of diving decompression tables for air and nitrox. Developed methods to record variables (e.g. time, depth, water temp, decompression stress) during operational dives. Delivered tables of pulmonary and central nervous system (CNS) oxygen toxicity and identify methods to prevent CNS oxygen toxicity. Develop one-atmosphere treatment protocols for decompression sickness using large animals. Develop adjustable, non-tethered diver thermal protection garment specifications; issue guidance for swimming efficiency. Delivered dive site capability to measure underwater sound exposure. Developed procedures for assessing underwater blast/impulse noise hazards; identify underwater acoustic threats to divers and develop strategy to protect divers; issued standardized tool noise assessment instruction.										

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Exhibit R-2a, RDT&E Project Justification
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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Ocean Engineering Development 0603713N	PROJECT NAME AND NUMBER Deep Submergence Biomedical Development/S0099
<p>- (\$1.927) Submarine Rescue: Delivered Submarine escape and rescue Senior Survivor Expert decision aid (SEAREX) hardware & software, plus training recommendations for class SSN 688. Determined impact of hypothermia on crew survival in disabled submarine, refine estimates of crew escape time in disabled submarine scenario by actual trial, publish effects of low oxygen and high carbon dioxide on oxygen consumption; published new guidance for passive CO2 scrubbing. Continue work on nitrox decompression and efforts to develop alternative decompression protocol for air saturated divers for the Deep Submergence Rescue Vehicle (DSRV) and SRDRS.</p> <p>FY 2000 Plan:</p> <p>- (\$1.877) Diver Health and Safety Research: Develop new underwater thermal protection garments. Develop guidance for acceptable underwater breathing apparatus respiratory loads present in combination. Produce diving at altitude decompression tables. Deliver validated scaling procedures from animals to humans for decompression. Conduct manned test of one-atmosphere treatments for decompression sickness with divers. Determine damage risk thresholds for underwater blast/impulse noise. Develop protective materials and procedures against underwater sound threats to divers.</p> <p>- (\$1.879) Submarine Rescue: Deliver SEAREX and Guard Book package for Ohio class submarines. Issue DISSUB atmosphere contaminant exposure guidance. Deliver new markers for re-entry into fire-contaminated spaces. Publish revised Pressurized Submarine Rescue Manual. Develop guidance for decompression in SRDRS. Provide alternative to electrically-powered or passive CO2 scrubbing.</p> <p>FY 2001 Plan:</p> <p>- (\$ 1.867) Diver Health and Safety Research: Final integration of USN decompression tables across gases, pressures, mixes, and repetitions. Updated performance standards for non-UBA diving gear. Deliver human exposure limits for underwater blast. Assess efficacy of prototype underwater swimmer protection strategies. Deliver guidance for acceptable UBA respiratory loads in combination. Continue development of new diver thermal protective garments with industry, and begin prototype evaluations. Issue recommendations to manufacturers for procedures to reduce drag underwater.</p>		

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Exhibit R-2a, RDT&E Project Justification
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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Ocean Engineering Development 0603713N	PROJECT NAME AND NUMBER Deep Submergence Biomedical Development/S0099
<p>- (\$1.801) Submarine Rescue: Determine allowable surface intervals for escapers and rescuees from pressurized DISSUB. Determine actual escape times from SSN 688 and SSBN 726 classes. Provide SEAREX package for SEAWOLF class. Develop SEAREX decision aid for New Attack Submarine (NSSN). Develop SRDRS biomedical acceptance criteria.</p> <p>B. Other Program Funding Summary: FY99: SBIR reduction -\$292M. FY00: \$.300M of the extramural program is reserved for SBIR assessment IAW 15 USC 638.</p> <p>Related RDT&E: Not Applicable.</p> <p>C. Acquisition Strategy: Integrated thrust area teams (e.g. decompression research) are established with university, commercial and in-house Navy lab to jointly execute biomedical R&D; peer review of research proposals accomplished by independent Technical Advisory Board; annual review of progress by Executive Review Board (CNO/NAVSEA/ONR/BUMED); program management by 0-6 Medical Dept Officer; contracting by competitive process using BAA and leveraging ONR capabilities.</p> <p>D. Schedule Profile: Not applicable</p> <p>..</p>		

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2000				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Ocean Engineering Development 0603713N			Deep Submergence Biomedical Developmental/S0099						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 99 Cost	FY 99 Award Date	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development											0.000	
Ancillary Hardware Development											0.000	
Systems Engineering											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not Applicable.												
Development Support Equipment											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not Applicable.												

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2000		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA - 4			Ocean Engineering Development 0603713N			Deep Submergence Biomedical Development/S0099						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 99 Cost	FY 99 Award Date	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Tooling											0.000	
GFE											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support	WR	NEDU	3.741	3.976		3.756		3.668		CONT.	CONT.	
Travel												
Labor (Research Personnel)												
Overhead												
Subtotal Management			3.741	3.976		3.756		3.668		CONT.	CONT.	
Remarks:												
Total Cost			3.741*	3.976		3.756		3.668		CONT.	CONT.	
Remarks: * Prior to FY98, funds were in Project M0099.												

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2000			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER					
RDT&E,N/BA-4	Ocean Engineering Development 0603713N				Shallow Depth Diving Equipment/S0394					
COST (\$ in Millions)		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost		10.094	12.956	11.703	12.342	10.463	10.671	10.885	CONT.	CONT.
RDT&E Articles Qty										
<p>A. Mission Description and Budget Item Justification: This project is to develop systems to support submarine escape and rescue missions, and conventional diver operations. Diver operations include ship husbandry, salvage/recovery, and submarine rescue operations to support national, as well as, Navy needs around the world. Modern certifiable diving systems that ensure diver safety and allow maximum work efficiency will replace currently antiquated systems. Efforts are currently focused on the Submarine Rescue Diving and Recompression System (SRDRS) to provide a new rapidly deployed emergency submarine rescue capability. SRDRS will fill the gap created by the decommissioning of USS PIGEON (ASR 21) and USS ORTOLAN (ASR 22) and provide a new capability of pressurized transportation of rescuees from a stricken submarine directly to the decompression system eliminating the requirement for Deep Submergence Rescue Vehicles, Mother Submarines and Submarine Rescue Chambers. SRDRS is to include an air transportable rapid assessment/underwater work system, a decompression chamber system and a pressurized rescue module. The SRDRS will provide a global rapid response capability to support submarine rescue missions with an increase in capability at a fraction of the cost of the currently available systems.</p> <p>Program Accomplishments and Plans:</p> <p>FY 1999 Accomplishments:</p> <p>- (\$10.094) Submarine Rescue Diving and Recompression System: Complete acquisition of and continue acceptance testing of the prototype assessment/Underwater Work System. Continue fabrication of the prototype Submarine Decompression System. Solicit for detailed design and fabrication of the Pressurized Rescue Module. Complete design and award contract for Submarine Decompression System support equipment.</p>										

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	PROGRAM ELEMENT NAME AND NUMBER Ocean Engineering Development 0603713N	PROJECT NAME AND NUMBER Shallow Depth Diving Equipment/S0394
<p>FY 2000 Plan:</p> <p>- (\$12.956) Submarine Rescue Diving and Recompression System: Complete acceptance testing of the prototype Assessment/Underwater Work System. Complete fabrication and acceptance testing of the prototype Submarine Decompression System and support equipment. Complete contract award for detailed design and fabrication of prototype Pressurized Rescue Module.</p> <p>FY 2001 Plan:</p> <p>- (\$11.703) Submarine Rescue Diving and Recompression System: Continue design and fabrication of prototype Pressurized Rescue Module.</p> <p>B. Other Program Funding Summary: Not applicable.</p> <p>Related RDT&E: Not Applicable.</p> <p>C. Acquisition Strategy: The Atmospheric Diving Suit (ADS) Segment of the SRDRS is a Non-Developmental Item (NDI) which is procured via a sole source contract. The Submarine Rescue System (SRS) segment of the SRDRS is largely based on the use of Commercial-Off-the-Shelf (COTS) technology and maximum use of Non-Developmental Items (NDI). The SRS segment is being procured using performance based specifications. The SRS contracts will be awarded competitively and will be based on technical capability and cost considerations (best value). Program Management of SRDRS is accomplished through the use of SEA 00C leadership of an Integrated Product Team (IPT). The Prototype system will provide full operational capability and no additional procurement is planned. The system is designed to be Government Owned/Commercially Operated (GO/CO).</p>		

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EXHIBIT R-2a, RDT&E Project Justification

DATE:

February 2000

APPROPRIATION/BUDGET ACTIVITY

RDT&E, N/BA-4

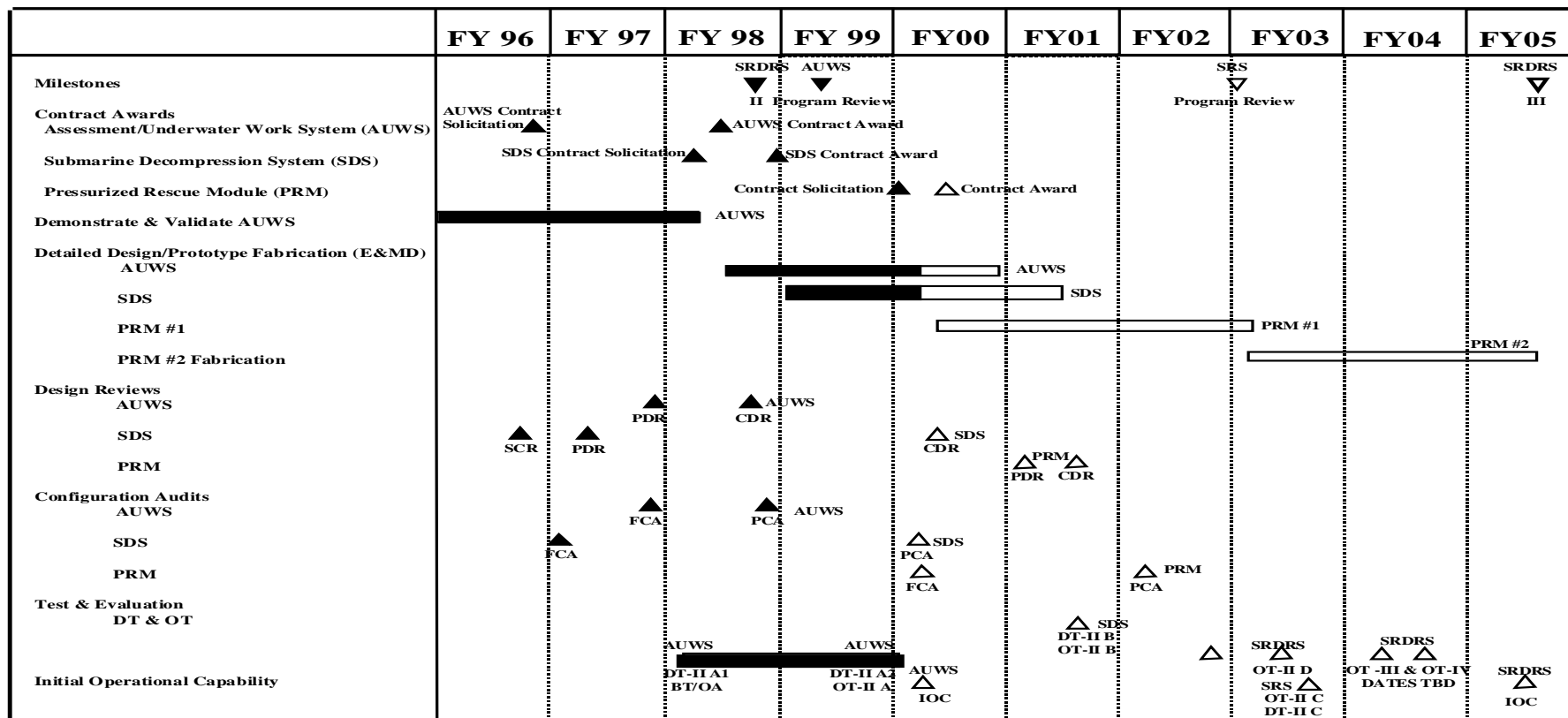
PROGRAM ELEMENT NAME AND NUMBER

Ocean Engineering Development 0603713N

PROJECT NAME AND NUMBER

Shallow Depth Diving Equipment/S0394

D. Schedule Profile:



R-1 SHOPPING LIST - Item No.

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Exhibit R-2a, RDT&E Project Justification

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2000				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-4			Ocean Engineering Development 0603713N			Shallow Depth Diving Equipment/S0394						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 99 Cost	FY 99 Award Date	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	NSWC - CSS	16.259	1.960	12/98	1.600	12/99				18.219	
	CPAF	Oceaneering	9.078								9.078	9.078
	RC	NAVFACCO	0.900	2.340	12/98						7.655	
	CPAF	GPC	0.000	1.756	03/99	4.415	11/99				1.756	1.756
	Various	Miscellaneous	1.985	0.263		4.358		8.203		CONT.	CONT.	
Ancillary Hardware Development											0.000	
Systems Engineering	CPAF	Oceaneering		2.892	12/98	1.754	12/99	3.000		CONT.	CONT.	
											0.000	
Licenses											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees	CPAF	Oceaneering	0.597	0.232	12/98	0.140	12/99				0.969	0.829
	CPAF	GPC	0.000	0.067	03/99	0.189	11/99				0.067	0.067
Subtotal Product Development			28.819	9.510		12.456		11.203		CONT.	CONT.	
Remarks: Award Fees are 6%.												
Development Support Equipment											0.000	
Software Development											0.000	
Training Development											0.000	
Integrated Logistics Support											0.000	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Subtotal Support				0.000		0.000		0.000		CONT.	CONT.	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)							DATE: February 2000					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA - 4			Ocean Engineering Development 0603713N			Shallow Depth Diving Equipment/S0394						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 99 Cost	FY 99 Award Date	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Miscellaneous	0.529									
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			0.529	0.000		0.000		0.000		CONT.	CONT.	
Remarks:												
Contractor Engineering Support	Various	Miscellaneous	0.316	0.327		0.400		0.400		CONT.	CONT.	
Government Engineering Support	WR	NFESC	0.095	0.172	12/98					CONT.	CONT.	
Program Management Support												
Travel			0.050	0.085		0.100		0.100		CONT.	CONT.	
Labor (Research Personnel)			0.453								0.453	0.453
Overhead												
Subtotal Management			0.914	0.584		0.500		0.500		CONT.	CONT.	
Total Cost			30.262	10.094		12.956		11.703		CONT.	CONT.	
Remarks:												

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